HARDENED SUBMINIATURE TELEMETRY AND SENSOR SYSTEM (HSTSS)

Briefing by:

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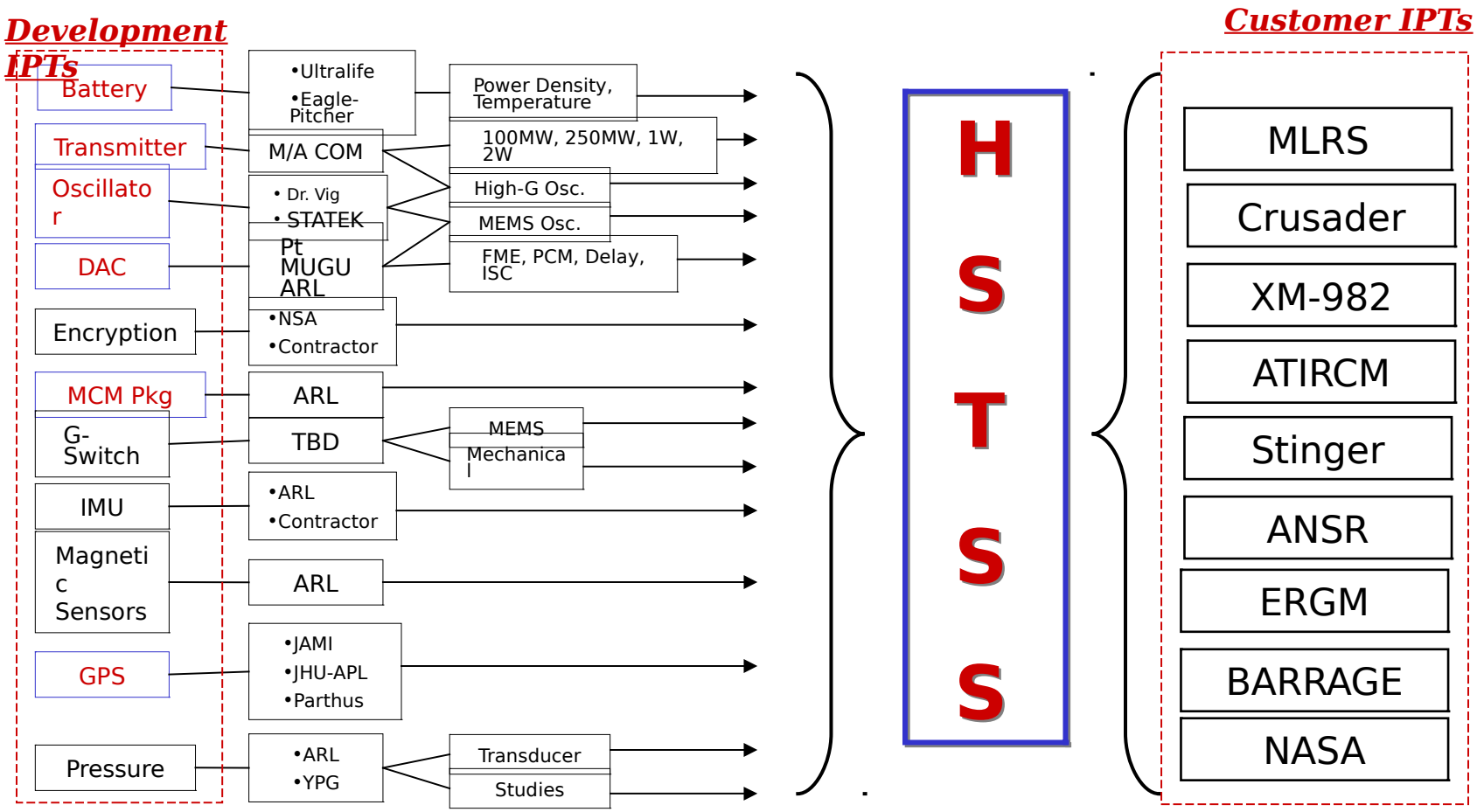
Background

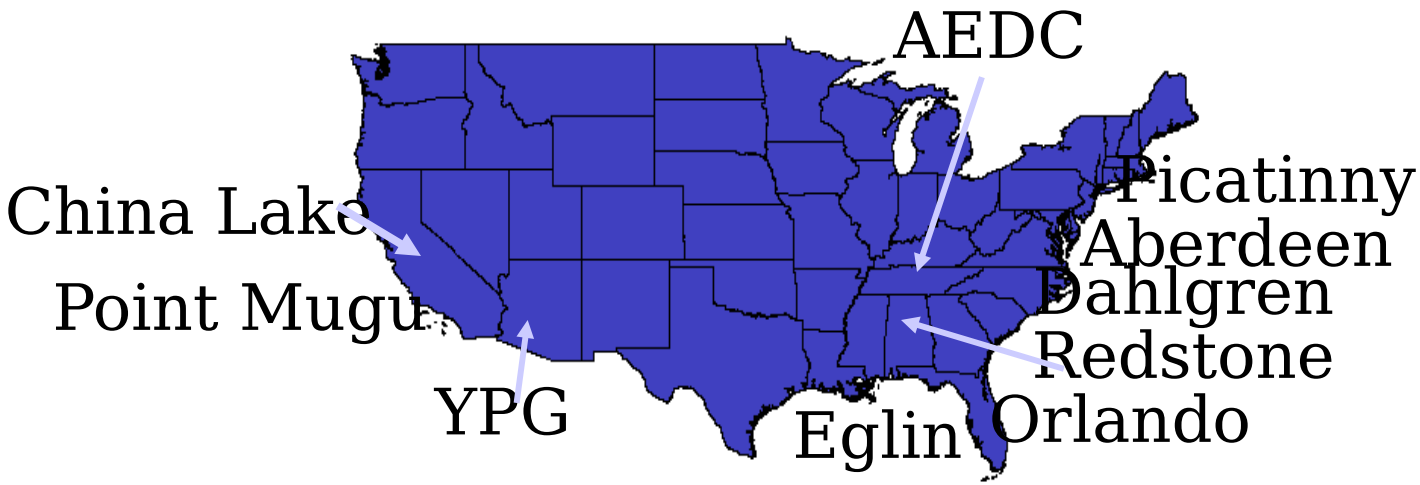
- HSTSS project was started in 1992 as an OSD Test Technology Development and Demonstration (TTD&D) and Army funded Project
- HSTSS is a multi-service instrumentation development program
- HSTSS is a low cost, micro miniature, high g (100,000 g) modular instrumentation system
- The components developed to date are the battery, the transmitter, the crystal oscillator and the encoder

Hardened Subminiature Telemetry and Sensor System (HSTSS) (HSTSS)



Government IPT Locations

UK DERA



PROGRAM TEAM

Project Director - Dennis Schneider

Engineer - Charlie Goodwin - Acting Project Director (STRICOM)
David Lyon (ARL)
Gary Katulka (ARL)
Gary Borgen (Pt Mugu)
Sal Longo (ARDEC)
Steve Davis (Eglin)
Shannon Haataja (RTTC)

Contract Specialist - Leslie Kennedy
Program Analyst - Leeza Torres
Cost Analyst - Ivette Feliciano

Support Contractor - Robert Carpenter (AST)
Ronald Colangelo (AEgis)
Rick Rosenberger (AST)
System Contractors - M/A COM, Statek, Eagle Pitcher, JHU-APL, Parthus Ultralife, OETC

Acquisition/Contracting

- **Strategy**

Building block approach requiring multiple task orders using full and open competition

- **Rationale**

History has shown that not all expertise resides within a single company

- **Issues**

Looking for industry to partner with HSTSS for integration of modules and systems

Upcoming Events

- HSTSS Symposium, August 27 - 29, Denver CO
- Delivery order for the NATO standard fuze

Technology Areas of Interest

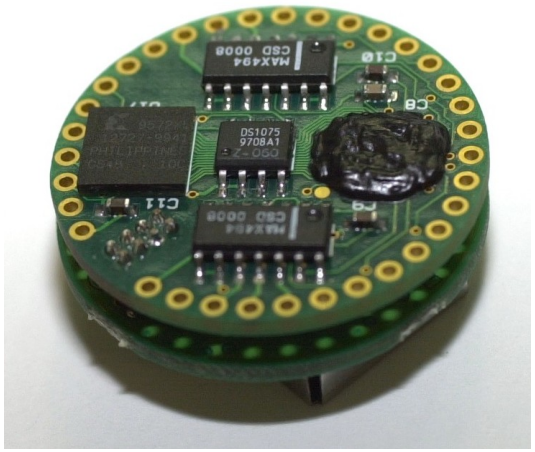
- TRANSMITTERS
- ENCODERS
- BATTERIES
- OSCILLATORS
- SENSORS
- PACKAGING

THAT ARE:

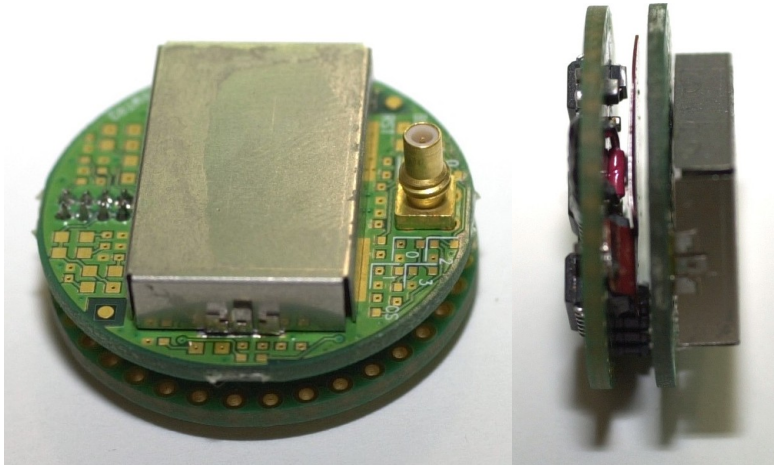
- Hi G Hardened
- Sub-Miniature
- IRIG-Compatible
- Modular

HSTSS Telemetry Module

ENCODER



TRANSMITTER



IMO

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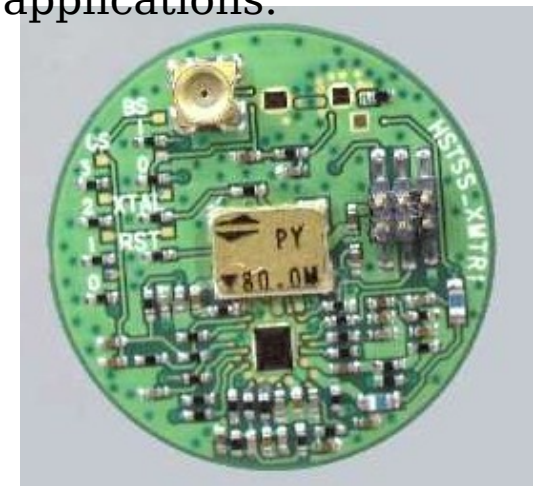
20 March

Potential Transmitter Requirements

Issue: Integrate High G S-Band Transmitter Modules. HSTSS has developed a set of transmitter chipsets (VCO, PLL, Amp, Crystal) and will be available after testing is complete. Expecting mid-FY02. Below are two transmitter designs that HSTSS IPT is using. Larger designs are also desired for small missile applications.

15 mm Transmitter Board Design



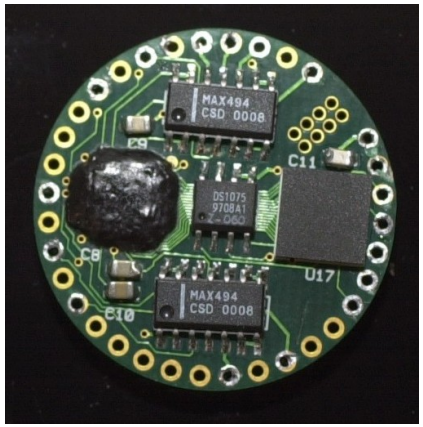
28 mm Transmitter Board Design

Potential Transmitter Requirements

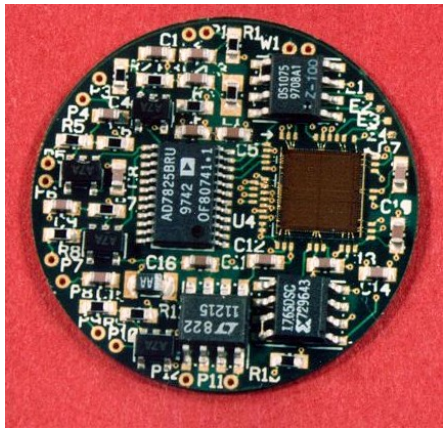
- Provide guidance on incorporation of new modulation scheme, currently used FM, FSK modulation. Looking for more efficient bandwidth.

Potential Encoder Requirements

Issue: Integrate High G Encoder Modules. HSTSS has developed encoder designs based on programmable logic devices (FPGA, CPLD, PIC) and have a need to take the designs and produce in quantities. Below are tw encoder designs that HSTSS IPT is using. Larger designs are also desired for small missile applications, such as a 2.75 Inch Missile.



28 mm CPLD PCM Encoder Design



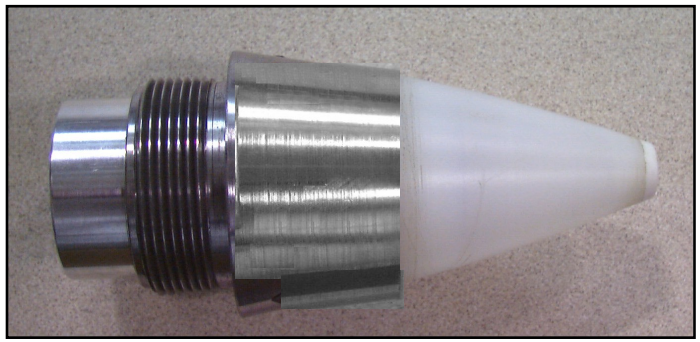
28 mm FPGA PCM Encoder Design

Potential Encoder Requirements

- Manufacture encoder design, form factor to be useable in NATO Standard Nose fuze and integration to MA/Com transmitter design
- Several orders of 100 quantity in FY02, with potential for follow-on quantities

Potential Telemetry System Requirements

Issue: Integrate High G Telemetry Module. Current designs have taken a larger design and optimized. The objective was to reduce the overall mechan profile.



Potential Telemetry System Requirements

- Manufacture form factor to be useable in NATO Standard Nose fuze and integration to MA/Com transmitter design
- Several orders of 100 quantity in FY02, with potential for follow-on quantities

HSTSS Components

Transmitter	M-A/COM developed:. 100mW, 250mW, 500mW, 1W, 2W power levels. (S & L Band IRIG std.)
Batteries	Ultralife, Eagle Pitcher, Primary & Rechargeable. Conformal packaging.
Data Acquisition	Pt. Mugu & ARL developed: PCM & sig. conditioning CPLD & FPGA technologies (MCM & PWB packaging
Sensors	TSPI, Pressure, Acceleration, etc.
Oscillator	STATEK developed: 100K g
Antennas	Leveraging MUBAT tri-service program/ Point Mugu Designers
Packaging	APL/ARL: developing rapid prototyping method for MCM technologies; high density pkg methodology

Critical Technical & Operational Parameters

- Building Block approach.
- The system is to be micro miniature and able to withstand up to 100,000 g's.
- Expandability and low cost instrumentation.
- Electrical and mechanical compatibility for embedd test instrumentation

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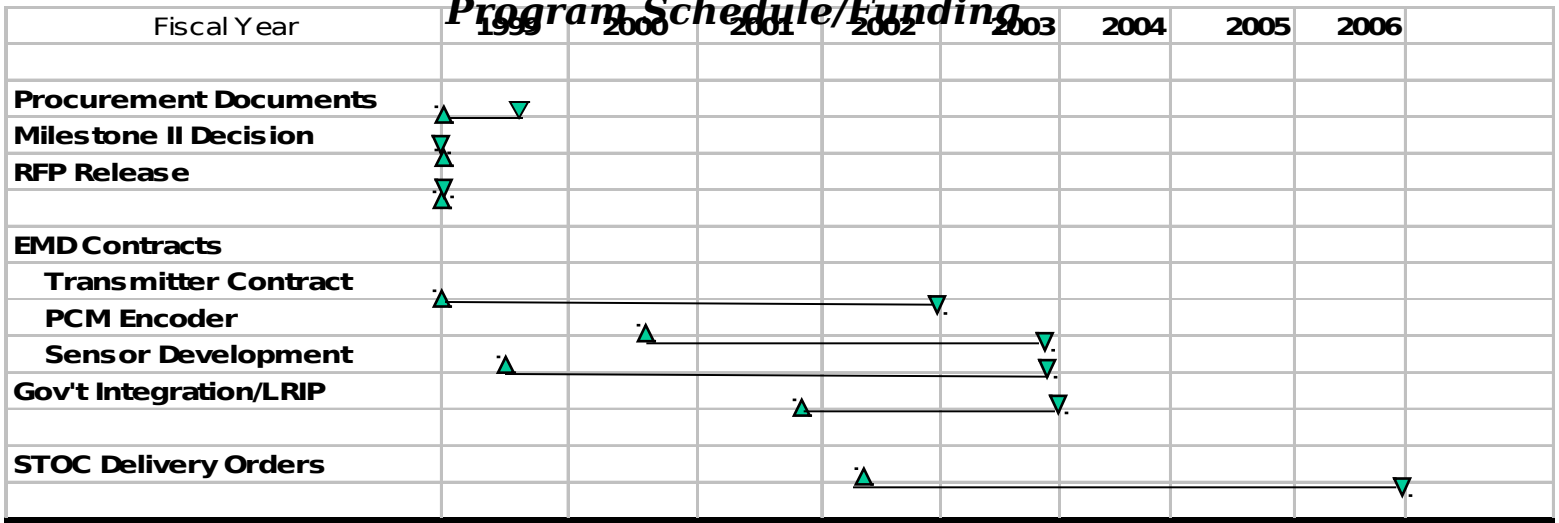
Program Schedule/Funding



Dollars in Thousands	Prior	1999	2000	2001	2002	2003	2004	2005	2006
TOTAL Required					$	$	?	?	?

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Summary

- HSTSS meets the instrumentation needs which could not be met before

- HSTSS can be embedded instrumentation

- HSTSS Symposium, August 27 -29, 2002, Denver CO